DOCUMENT RESUME

ED 331 189 EA 022 976

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TITLE "Jack Captured the Crown and Jill Came Tumbling After": The Gender Factor in Curriculum Policy 1945-1990.
PUB DATE Apr 91
NOTE 21p.; Paper presented at the Annual Meeting of the American Educational Research Association (Chicago, IL, April 3-7, 1991).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Cognitive Style; Curriculum Design; *Curriculum Development; Policy Formation; Private Education; *Private Schools; Secondary Education; *Sex Differences; *Sex Role; Sex Stereotypes; *Single Sex Schools

ABSTRACT

The role of gender in curriculum development and the relationship between gender and learning in the female independent secondary schools are examined in this report. Historical methods focused on the years 1945-90. The research was based on an examination of the secondary literature as well as intensive archival research and indepth interviews with school heads and curriculum policymakers at seven New England and Ohio female independent secondary schools. The research also made use of the responses of a questionnaire sent to 117 such schools in New England and the Northeast central states. Findings suggest that the female independent schools, with few exceptions, did not develop gender-specific curricula to enhance young women's learning styles or provide courses of study that would create gender equality for all students. Following a discussion of biological and sociocultural learning differences between the genders, recommendations are made for: (1) inclusion of the feminine approach to problem solving for males and females in all schools; and (2) reconstruction of coursework content to integrate the experiences of both genders. (42 footnotes) (LMI)

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" JACK CAPTURED THE CROWN AND JILL CAME TUMBLING AFTER
THE GENDER FACTOR IN CURRICULUM POLICY 1945-1990

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THESIS: Although relevant in the history of private schools, the consideration of gender in formulating curriculum remains relatively unchanged in the female independent secondary schools, and the issue of gender equity in the curriculum continues to be unresolved in both the private and the public schools.

Periodization for this research focused on 1945-1990; established historical methods were used. The research was based on an examination of the secondary literature as well as intensive archival research and in-depth interviews at seven New England and Ohio female independent secondary schools with heads of schools and those responsible for curriculum. It also made use of the responses to a questionnaire sent to 117 independent secondary schools in New England and East North Central States.

Gender in the context of the research in curriculum policy making refers to the biological differences between females and males as well as to the socialization process that develops the attitudes and behaviors associated with being female or male. Before the feminist movement of the Sixties, and even into the Seventies, the definition of gender referred only to the female or male sex of an individual. Since then, the definition of gender has broadened to include the study of social actions and relationships that involve both observable interpersonal behaviors as well as the ideas people share and out of which they act.[1] Gender, therefore, refers to the sociocultural learned differences between males and females as well as to the biological differences. More specifically, the gender factor relates to the behaviors and attitudes associated with being male or female.

The issue of gender equity focuses on just rather than equal education. Most female independent secondary schools, however, were founded to give young women an education modeled closely after what privileged white boys already had but is that so different from all schools? This research reinforces a curriculum based on white patriarchy in ways not yet clearly examined. The implications are that the girls in these schools, as in most schools, are still not receiving an

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education geared to their female strengths and to improve their weaknesses. The issue of gender equity, therefore, comes into conflict with curriculum policy determination for females and males.

The purpose of this research into curriculum policymaking and gender equity in college preparatory female secondary independent schools develops through answering the following two questions:

> I. Considering the centrality of education to woman's emancipation and the focus on gender equity since the feminist movement of the sixties, what part has gender played in curriculum determination? What is the relationship between gender and learning in the female independent secondary schools?

Acknowledgement of gender as a factor in curriculum policy making accepts the assumption that learning for girls and boys involves different experiences and perceptions. Not until the eighties, however, did the educational needs and learning styles of girls and boys receive concentrated attentions. The female secondary independent schools, for example, spent so much time endeavoring to emulate the success of boys' schools that they did not spend much effort on the fact that girls may think and learn differently from boys. Scholars, nevertheless, researching gender and cognition have begun to ask how gender affects education given the differences found in learning between females and males.

During the Sixties, most feminists agreed that men and women were equal, and that gender differences resulted from differential upbringings and a biased system of education.[2] Research scientists working with gender in the Seventies, however, began to observe differences in males and females that were independent of culture. Girls were not simply made up of sugar and spice and everything nice nor were boys all frogs and snails and puppy dog tails. Differences in brain functions became more apparent. Eleanor Maccoby and Carol Jacklin of Stanford and others found girls more sensitive to auditory or verbal stumuli from birth,

especially to the voice of their mother. Infant boys, in contrast, babbled as responsively to rattles as they did to their mother. Today evidence exists to demonstrate that girls are more distracted by noise than boys. With regard to motor performance, girls showed superiority more consistently and earlier; boys demonstrated more mastery of total body coordination and visual learning and could manipulate three-dimensional space more abstractly than girls.[3] The eighties brought new scientific techniques and new technology for brain study that revealed the complexity of the brain and differences in the brains of females and males. In 1987, Camilla Benbow of Iowa State University, in her research on the differences between male and female brains, stated, "After fifteen years of research looking for an environmental explanation and getting zero results, I gave up. Our work is pointing us to a biological explanation."[4] Investigating the development of brain lateralization and warning of over-interpretation, Beryl Lieff Benderly found that females excelled in left hemispheric properties, verbal, but not linear reasoning. Males led in such right hemispheric techniques as spatial analysis but not in the right hemispheric qualities associated with intuition.[5] Jerre Levy and Jerome Levy, reporting in Science, stated that relative hemispheric development as a function of sex is independent of the specialization of the two hemispheres. They believe that the differences in boys and girls cannot be attributed to socio-cultural factors that might encourage different abilities in female and male children.[6] Even the belief that boys upbringing shaped them to be more aggressive than girls has come under attack with findings that sex difference in the tendency to do physical harm is due more to biology than to socialization. The foundation for this finding rests on the effects of testosterone levels. "However, it is testosterone circulating not only post-pubertally, as has been commonly thought, but also during early development--specifically, during fetal life, at the stage

when the brain is forming.[7] In 1982, the National Academy of Sciences published reports of increased in utero levels of testosterone in males. The hormone slowed the development of the left hemisphere of the brain, which made the right hemisphere compensate by becoming stronger in those aspects of learning that it controlled such as visual ability. Increased testosterone levels, therefore, accounted for the male propensity at a more visual-spatial, or simultaneous, approach to cognitive processing as opposed to the more female sequential approach.[8] In females, the hormones estradiol and progesterone "probably are at the root of their less aggressive behavior as compared to the male."[9] They are, therefore, more sensitive to mood, more evenness of temperament and maintain a general affinity for sequential ability related to strength in language skills all through their schooling.

In sum, the research supports the following conclusions based on biological findings; (1) girls display more verbal ability and excel in tasks requiring verbal ability; (2) boys perform better in tasks requiring visual-spatial ability and do better in tasks requiring mental rotations, mazes, map reading, and mathematics. Furthermore, results of a representative national sample of approximately 12,000 young men and women between the ages of fifteen and twenty-three, whether enrolled in school or not, documents that sex differences in learning hold not just for the elite who go to college but for those of every educational level and socioeconomic class, including school dropouts and the very poor.[10]

Socialization or social pressures for the females often involves sexual sterotyping as well as discouragement with regard to taking risks. In 1966, at the beginning of the feminist movement in the Sixties, Elizabeth Douban and Joseph Adelson, authors of The Adolescent Experience, spoke about the trend of compliance experienced by young women. "Girls do not generally feel that their

parents want them to be independent or show initiative, or take over the task of self-control; nor do the girls find within themselves any strong urge to do so.[11] With the women's movement of the Sixties and Seventies, the hope existed that the perception of the sex role of women would have changed by the Eighties. The Eighties arrived, but gender equality did not.' William Chafe, writing on sex equality in 1983, noted that "it is by no means clear that change has brought progress toward equality, or for that matter any significant alteration in the underlying values governing our society."[12]

Behaviors and attitudes on the part of faculty and administrators in the classroom, with the classroom materials, and in the culture of the schools generally inhibit active female participation in classroom discussions. In their research on gender in education in 1983 at American University, Myra and David Sadker argue that most classrooms encourage damaging stereotypes for both girls and boys.[13] The stereotypes that girls and boys bring with them to school do not seem to be offset by the culture of the school or by the expectations of the teachers. In their examination of school textbooks, the Sadkers found several forms of bias that often characterize instructional materials with regard to females, i.e., invisibility, imbalance, unreality, and linguistic bias as well as sexual stereotyping. They point to the need for educators to read critically for the purpose of identifying sex bias in school text and media materials.[14] Research shows that non-stereotyped school materials can influence student's attitudes and perceptions.[15] As previously noted, authors and publishers of school-related materials have become increasingly alert to the pressures against stereotyping.

Research on gender differences in the use of language suggest the division of society into two domains: speaking and listening. Contrary to the popular belief that girls talk more than boys, studies repeatedly find that boys, not

girls, do the talking and women do the listening in the educational setting.[16] In general, the style of girls speaking tends toward the hesitant, qualified, and question-posing.[17] Furthermore, girls generally talk and participate less in mixed group situations than in single-sex groupings in the classroom.[18] In their work on the climate of the classroom, Roberta Hall and Bernice Sandler found that faculty overwhelmingly participate in the following behaviors especially in a coeducational setting:[19]

> Talk more to boys, and urge them to try harder if they are initally unsuccessful;
>
> Praise boys for the intellectual quality of their work and criticize them for lack of form and neatness, but do the opposite for girls;
>
> Make eye contact, nod, and gesture more in response to male's questions and comments than to females;
>
> Wait longer for males to answer a questions before going on to another student;
>
> Ask female students questions that require factual answers or lower order questions while asking male students questions that demand personal evaluation and critical thinking or higher order questions.

These patterns of participation create a chilly climate for female students from elementary school through college and a cultural environment that inhibits female participation and sends subtle messages that become part of the hidden curriculum for females in schools.

Behaviors and attitudes on the part of American Schools and cultures also affect the choice of higher risk courses. This inhibition on the part of the girls proves to be especially true with regard to mathematics and science courses.

The type of courses chosen in school also accounts for differences in achievement between adolescent females and males. "At every stage of the pipeline we lose women," said Phyllis Moen, director of the sociology program at

the National Science Foundation. "We lose women when they choose their courses in junior high school and high schools. We lose them when they choose majors at the undergraduate level and certainly at the graduate level."[20] A national study published in 1989 Clifford Adelman and Nabeel Alsalam, researchers in the US Education Department Office of Research, based on transcripts and career dataa for approximately 13,000 students, found that females take substantially less math than men, and at more basic levels.[21] Furthermore, in reviewing the questionnaires sent to the independent schools, some respondents of the coeducational independent schools concurred. Corroboration also came from a study by Hawken School in Ohio that conducted a study of the distribution of Female to Male in Advanced Courses in Math and Science and distributed the results in 1989.(See Appendix C). For math, the study revealed that the average of girls to boys in the Upper School was 40% to 60%; however, the distibution of females to males involved the following:

	Females	Males
Algebra 2 Honors	5	18
AB Calculus	10	22
BC Calculus	0	8
Advanced Math Honors	12	19
Geometry Honors	10	15

In the female independent schools, the data from the schools indicated that more girls were taking four years of mathematics and that more were enrolling in the higher level courses. Part of the explanation for this disparity between the coeducational independent schools and the female independent schools is the result of the socialization practices of the female independent schools.

In addition, the natural propensity of girls to be more sensitive to the needs of others is not enhanced or considered very relevant in matters of education. Most recently, studies by Jean Baker Miller, Nel Noddings, Carol Gilligan, and Mary Belenky, Blythe Clinchy, Nancy Goldberger and Jill Tarule

reveal how the female voice or self has been silenced throughout in American culture.[22] Their work leads to a better understanding of gender differences through women's natural propensities as well as through the socialization of women with regard to learning. For girls, rules of right and wrong play less of a role in making choices than do context and responsibility. Carol Gilligan, Harvard University Department of Education, finds that females impose a distinctive construction on problem solving by seeing moral dilemmas in terms of conflicting responsibilities and a sense of connectedness to others. As Blythe Clinchy stated in 1988, "females see others point of view; they ally with others positions."[23] Therefore, females foster "connected knowing" as opposed to the "separate knowing" of males who rely more on a rights orientation.[24] The terms connected knowing and separate knowing provide a useful tool to clarify the differences between kinds of knowing that align themselves with traditional gender socialization. Females have been taught the importance of feeling with another in the caring perspective, while males have been taught the importance of thinking critically in a more autonomous sense in order to protect their own "right(s)" perspective.[25] These differing perspectives affect the type of participation that will occur in the classroom as well as the reception to differing kinds of curriculum.

With regard to self-esteem and achievement in schooling, females tend to more external patterns of reinforcement. They more often attribute achievement to external factors such as luck or ease of the task and possess a general lack of self confidence.[26] In the secondary school, the implicit or hidden curriculum affects the development of the female attitude towards self. The hidden curriculum is taught through teachers' expectations, reinforcement, and implied messages in learning materials. When these prove to be unsatisfactory, as shown in the teaching of mathmetics for girls, and the learning materials are biased,

attitudes toward self-esteem and self-confidence become affected. When this occurs, the tendency toward low expectations, challenge avoidance, attribution of failure to internal ability, accompanied by debilitation under overall failure, increases particularly among bright girls.[27] Overall, these socio-cultural factors become more and more important in the explanation for the differences between female and male academic achievement after World War II.

Noting heightened awareness of the differences in learning styles, especially with regard to problem solving, and the existence of a hidden curriculum, this researcher expected to find a corresponding awareness of the need for change in curriculum. Among the coed and single-sex independent schools, however, only 20% agreed that girls learning styles differed from boys. Among the female independent secondary schools, only 50% agreed even though 75% gave evidence of the awareness that girls learning styles differed from boys. Responses from all schools included the following replies: "This has been a neglected area at our school. At times, we have promoted sex equity activities but have not evaluated curriculum for gender equity or gender opportunities;" "We section based on performance so there is implicit sectioning on the basis of sex;" "We are trying to arrive at philosophy that all courses give equal emphasis to both sexes;" "We should probably have a philosophy--we don't. If asked, teachers would say, "Of course, we give equal emphasis;" The girls' schools replies included the following range of responses: "The focus is on girls!" "As part of our mission, we must be geared to the needs of young women;" "In general, the feeling is that male values tend to dominate so that where there is a choice, we should lean to including women's point of view;" "We have no conscious philosophy on this issue." Curriculum policy makers in the female schools, who indicated awareness and acceptance of the theory behind the gender factor, demonstrated frustration in implementation or acceptance by the

administration and/or faculty. The conclusion, therefore, becomes that female independent secondary schools, with few exceptions, choose not to be agents of change in the following ways: (1) further developing curriculum that would specifically enhance the learning styles of young women; (2) providing courses of study that would intensify gender equity for all students.

> II. What lessons can be learned from examining the issue of curriculum policy making and gender equity in female secondary independent schools to produce policies for a more effective learning environment in both the private and the public sectors of education?

Curriculum determination that incorporates the gender factor begins with heightened awareness and study of the biological roots of gender consistent differences in learning between females and males. The results of the studies that have been done are not conclusive, but they are disturbing. They suggest to the uninformed that some student behaviors are immutable. While the possibility of a genetic base for some behaviors cannot be cast aside, no evidence has surfaced that suggests that biological behaviors cannot be modified by environmental interventions. So the important point is that even if certain behaviors have a heredity base, these behaviors can be modified.

To improve math and science achievement for girls, courses that focus on problem-solving skills could be added and the type of problems presented to girls in math and science courses could be reformed to be more relevant to female experiences. They need not focus on trains or cars going at different speeds in different or same directions! Furthermore, policy makers could require courses designed to incorporate more hands-on experiences for females. For males, the focus could be on more computational and verbal skills to improve weaknesses with these skills. In coeducational independent schools, as well as public schools, math and/or science class sections could be segregated by sex; this has proven successful in the Greenwich School in Connecticut and Hunter College High School

in New York. The ideal situation, therefore, would be to design courses that facilitate the strengths and improve the weaknesses of both sexes to enhance gender equity.

The California Statewide Assessments for grades eleven and twelve in 1988, as well as the National Assessment of Educational Progress (NAEP) confirm differences in achievement in history-social science testing that favor males. With awareness of the sex differences in spatial abilities, map activities could be structured differently. Research by Smith and Litmen highlights that instruction given as early as the fourth grade improves spatial visualization skills for girls.[28] In addition, textbooks chosen by teachers need to include more representation of females and more females in active non-stereotypical roles. Furthermore the negative attitude towards the importance of social studies needs to be improved. Girls can be taught to think critically about international and national affairs from all points of view.

Study of the socio-cultural roots of learning should begin with an examination of the social interactions in which girls and boys construct gender-related perceptions and responses. These perceptions and responses become part of the informal or hidden curriculum and relate to the socialization process that can be identified.

To help implement the changes desired regarding sex role stereotyping, educators must be aware of the sources of the stereotyping. One source of sex role stereotyping comes from the subject matter of the curriculum derived from the materials used. Careful choosing of texts and media with regard to gender aids in reducing the amount of stereotyping included in the course of learning. Concept formation about sex roles, however, also comes from administrative attitudes, school staffing patterns, school publications, bulletin

boards contents of trophy cases and other aspects of the physical plant, as well as career counseling, offerings for extracurricular activities, programs for assemblies and, of course, teacher attitudes and discussions.[29] Teacher's attitudes toward and interactions with students become key in developing attitudes and feelings about self and others.[30] These attitudes form part of the hidden curriculum that consists of those learning states in an educational setting that are either unintended or intended but not openly acknowledged to the learners in the setting unless the learners are aware of them.

The trend from studying overt stereotyping in the Seventies to studying hidden or subtle stereotyping in the eighties by such researchers as Myra and David Sadker of American University and Roberta Hall and Bernice Sandler of the Project on the Status and Education of Women of the Association of American Colleges points to the change in emphasis that has occurred in studies on classroom atmosphere. The latter highlights how schools can improve the classroom atmosphere through the following measures: teacher workshops on the verbal and nonverbal behavior and the valuation of behaviors by sex; workshops in speech/communications and in intellectual argumentations skills geared specifically to the difficulties some female students may experience regarding class participation; teacher-education programs that incorporate classroom climate issues and emphasize practical skill-building techniques designed to identify and overcome subtle differential treatment of students on the basis of sex.[31]

In her work on the feminine approach to problem solving, Nel Noddings demonstrates how the course of study developed in the secondary schools places emphasis on the more masculine standards and the more separate and impersonal standards for decision making as opposed to the more connected ways

of thinking.[32] Pedagogy, which takes into account the feminine approach to thinking, includes accepting girls' feeling about subject matter in the curriculum and incorporates her perspective.[33] Trust and independent thinking for girls is promoted. At the Brimmer and May School, this philosophy brought about revision of the curriculum and pedagogy. They noted, however, that female teachers incorporate female thinking in the classroom easier than do the male teachers because connected knowing comes more easily to women. As a result, girls fear of teacher dissatisfaction in response to curricular materials then decreases when they know that their perspective, i.e., the feminine voice, receives as much acceptance as the male perspective or masculine standards. In addition, acceptance of the female voice increases the girls' feelings of self-worth and self-esteem and encourages girls to take more intellectual risks. Peggy McIntosh of Wellesley College, interviewed on girls' schooling, stated the following:[34]

> ... I think the real benefits are the inadvertent benefits of having girls find their own tentative voices and be in a lateral relation with one another instead of continually working in a competitive model. Girls' schools supply classrooms in which all of the voices are female, which means that you get rid of the usual tendency of the boys to take over, to interrupt, to dominate, to be looked at more and have higher expectations of them than the girls have.

The socio-cultural environment also affects academic achievement, self-esteem and risk taking.

> Many teachers tend to agree that most girls take few intellectual risks in their desire to be right and to please the teacher. One teacher asked, Where did girls ever get the idea that they have to be so conscientious or feel that there is something wrong with them if they make a mistake?" Another reminds us that girls frequently preface responses with "This probably isn't right, but..." Once again, feelings of confidence appear to be central to many girls' academic motivation and performance. 35

For example, anxiety fostered by the hidden curriculum for young women in mathematics causes the relationship between mathematics achievement and anxiety and between number of advanced courses taken and anxiety to remain negatively

correlated. Research reveals that females tend to attribute achievement in school to external factors such as luck or ease of task. Challenge and risk taking, therefore, should be reinforced and encouraged in areas in which girls are perceived to be weaker; this is also true for boys and should be incorporated in all educational environments to promote gender equity.

A study at Andover documented the problem of lesser female academic self-confidence. It suggested that this trait may well have long-term effects on girls' willingness to try new subjects or nontraditional careers and may influence long-term aspirations and accomplishments.[36] To increase self-confidence in non-traditional subjects for girls, such as mathematics and science, girls need to be allowed time for the knowledge that emerges from firsthand experience and from doing rather than from listening. The curriculum needs to focus on open-ended questions that would encourage girls to think more independently against their natural tendency for closure and would increase self-confidence. These curricular suggestions result from the research on female education and from listening to feminine voices in studies conducted by Mary Field Belenky, Blythe McVicker Clinchy, Nancy Rule Goldberg and Jill Tarule who wrote Women's Ways of Knowing as well as by Mary Baker Miller, Carol Gilligan, and many others interested in how girls think and learn.[37]

Studies looking at girls success in meeting their expectations or in rising to the top show that girls often feel as though they have not earned their success or feel as though they do not belong, i.e., they feel fraudulent and maintain low self-esteem despite their success. Kiyo Morimoto of the Bureau of Study Council at Harvard/Radcliffe stated that a majority of seniors accepted to the incoming class feel they were admitted to the college by mistake.[38] Peggy McIntosh of Wellesley College Woman's Studies noted that girls feel fraudulent "especially when ascending in hierachies in which by societal definition they do

not belong.[39] Comments from boys in independent schools revealed that they acknowledge their own success and expect that others will recognize their achievement. In contrast, many girls interviewed revealed that their friends provided the confidence and support needed to try to succeed. They relied more on friendship and interpersonal success as an index of their own self-worth and self esteem than they do on themselves.[40]

The brighter girls, who have had early and consistent success, become prime candidates for motivational intervention, i.e., intervention that puts the focus of success on internal attributes such as ability and effort as opposed to external factors such as luck or difficulty of task.[41] Evidence of this argument became apparent at a 1983 independent school conference featuring Theodore Sizer. After studying American high schools, Theodore Sizer insisted that students, especially girls, be given the encouragement to development independent thinking and primary responsibility for learning through enhancement of internal motivators such as self-esteem.[42]

In sum effective gender equity cannot occur without the incorporation of both the female and male voice in the curriculum. Recent research has opened up new doors in understanding the feminine voice and the different ways in which young women think and solve problems. Curriculum policy makers need to place more emphasis on the feminine approach to problem solving but not to the exclusion of the masculine approach that highlights more separate or impersonal standards for decision making. Both problem solving techniques should be included so that the academic strengths of females are reinforced at the same time as the weaknesses are fortified. This type of curriculum should be utilized for both females and males in all schools so that gender equity could be achieved.

With regard to courses of study, coursework needs to integrate the feminine experience as well as the male experience. Policy makers should not revert to the curriculum that Jack built, i.e., curriculum developed by males for males. Integration of the feminine experience in the traditionally male-oriented curriculum would enhance the knowledge of the female perspective in all disciplines. This integration, however, does not mean to "add women and stir", true integration means reconstructing curriculum to include all perspectives to achieve gender equity.

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